

**A NEW VARIETY OF *ERIOGONUM URSINUM*
(POLYGONACEAE, ERIOGONOIDEAE)**

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ABSTRACT

Eriogonum ursinum var. *erubescens*, a new taxon of *Eriogonum* subg. *Oligogonum* (Polygonaceae: Eriogonoideae), is known presently from scattered populations in the northern coastal ranges of Siskiyou and Trinity counties, California. A portion of its range is the same as that of the rare Siskiyou mariposa lily (*Calochortus persistens*). The blushing wild buckwheat differs from the var. *ursinum* of the Sierra Nevada in having an umbellate (not biumbellate) inflorescence, longer peduncles (5–25 vs. 2–5 mm) in fruit, involucre (4.5–8 vs. 3.5–4.5 mm), mature flowers (5–9 vs. 5–6 mm) and achenes (5.5–8 mm vs. 3–5 mm).

KEY WORDS: *Eriogonum*, Polygonaceae, California

An opportunity to examine collections of *Eriogonum* Michx. (Polygonaceae Juss: Eriogonoideae Arn.) in the various district herbaria of the Klamath National Forest in 2001 resulted in the discovery of a novel wild buckwheat. Gathered initially in 1982 at Mahogany Point at

the northeastern end of the Scott Bar Mountains west of Yreka, Siskiyou Co., California, the unicate collection was identified as *E. umbellatum* Torr. var. *stellatum* (Benth.) M. E. Jones. A second collection made in 1992 was identified as *E. ternatum* Howell. The cream-colored flowers, villous involucre and exceptionally long achenes should have quickly differentiated these collections from those species.

Fieldwork conducted in the fall of 2001 showed that the new species was growing in some profusion near Mahogany Point on metavolcanic and metasedimentary soils with *Holodiscus discolor* (Pursh) Maxim. and *Prunus emarginata* (Douglas ex Hook.) Walp. Additional and much more detailed work was conducted in 2002; this is described below. Significantly, the new wild buckwheat is found in the same area occupied by the California state threatened Siskiyou mariposa lily (*Calochortus persistens* Ownbey), a taxon that is currently under consideration for federal protection under the Endangered Species Act. Additional herbarium work has shown the plant to be found to the south along the backbone of mountain ridges forming the Trinity, Tehama, and Shasta county lines.

Eriogonum ursinum S. Watson var. **erubescens** Reveal & J. D. Knorr,
var. nov.

TYPE: United States. California, Siskiyou Co.: Scott Bar Mountains, n and w slope and ridge of Deadwood Baldy Peak, Klamath National Forest, on metasedimentary (chert) soils associated with *Ericameria nauseosa* (Pall. ex Pursh) G. L. Nesom & G. I. Baird var. *speciosa* (Nutt.) G. L. Nesom & G. I. Baird and scattered *Pseudotsuga menziesii* (Mirb.) Franco, 1675-1725 m elev., T45N, R8W, sec. 6 SESW¼ and sec. 7 NW¼, N41°46'06", W122°49'09" (top of the peak), 5 Aug 2002, J. L. Reveal & J. D. Knorr 8371 (holotype, NY; isotypes, BRY, CAS, CHSC, DAV, GH, HSC, K, KNFY, MO, OSC, RENO, RSA, SOC, UC, US, UTC).

A var. *ursino* inflorescentiis umbellatis (nec biumbellatis) divisis differt.

Plants low, spreading, loosely matted, herbaceous perennials 1–2.5 dm high and (1.5) 2–8 (12) dm across, with a spreading, woody caudex arising from a woody taproot, the caudex branches often rooting at the nodes where in contact with the ground; *flowering stems* erect, slender, 0.4–2 dm long, thinly tomentose to floccose, the bracts below inflorescence 4–6, foliaceous, lanceolate to narrowly elliptic, 1–2 cm long, 2.5–6 mm wide, villous on both surfaces but generally more so abaxially; *leaves* in rather dense compact basal rosettes restricted to the base of flowering stems and tips of exposed caudex branches, the leaf-blades elliptic, 0.7–2 (2.2) cm long, 0.4–1 (1.2) cm wide, densely white tomentose abaxially, sparsely floccose to subglabrous or glabrous and green to yellowish-green adaxially, the margins slightly wavy, the petioles 0.5–1.5 cm long, tomentose, the petiole-bases elongate-triangular, 1–2.5 (3) mm long, 1.5–2.5 mm wide, thinly tomentose abaxially, glabrous adaxially; *inflorescences* umbellate, thinly tomentose, the branchlets 3–5(–7), villous, 1–2 mm long in anthesis, 3–15 (17) mm long in fruit, each branchlet terminate by (2) 3, linear to narrowly lanceolate, semifoliaceous bracts, 0.7–1 cm long, 1–2.5 mm wide, these villous on both surfaces; *peduncles* erect, slender, villose, often obscured by the numerous flowers, those terminating branchlets (1–)2–5 mm long at anthesis, 5–10 mm long in fruit, the centrally positioned one 5–10 mm long at anthesis, 10–25 mm long in fruit; *involucre*s solitary at each dichotomy, turbinate to turbinate-campanulate, 4.5–8 mm long, 3–4 mm wide, villous abaxially, glabrous adaxially, the teeth 5–8, erect, triangular, 0.5–2 mm long; *pedicels* erect, slender, becoming recurved and exserted from involucre when flowers in fruit, (5) 6–8 (9) mm long, glabrous, the two subtending bractlets linear, 5–7 (8) mm long, densely hirsutulous with numerous, long, marginal cells; *flowers* stipitate, cream-colored or rarely yellow with an indistinct midrib, (4) 5–7 mm long at anthesis, becoming fused with a blush of pinkish red to maroon and 6.5–9 mm long in fruit, including the 0.5–0.8 mm long stipe, glabrous abaxially, thinly tomentose along the midvein adaxially, the tepals slightly dimorphic, those of the outer whorl broadly obovate, 5–7 mm long, 3–3.5 mm wide, those of the inner whorl oblong, 4.5–6 mm long, 1.5–2.5 mm wide, connate basally; *stamens* slightly exserted, 3–5 mm

long, the filaments densely pilose at least half their length, the anthers yellow, 0.7–0.8 mm long, oblong, the styles 1.5–2.5 mm long; *achenes* light brown, obscurely trigonous, (5) 5.5–8 mm, glabrous except for the slightly pubescent, indistinctly 3-angled beak; embryo straight.

Other collections examined.

UNITED STATES. California, Siskiyou Co.: Mahogany Point, 5 Aug 1982, *Reed 433* (KNFY); 0.25 mi NW of Mahogany Point, T45N, R8W, sec. 22, 26 Jun 1992, *Knorr 387* (KNFY); 0.25 mi SW of Montana Peak along Gunsight Ridge, T45N R8W, sec. 23 NWNE¼, 11 Jul 2002, *Knorr 652* (CHSC, KNFY); 0.25 mi NW of Mahogany Point along Gunsight Ridge, T45N R8W, sec. 22 NE¼, 18 Jul 2002, *Knorr & Barnes 657* (HSC, KNFY); 0.25 mi NE of Mahogany Pt. along Gunsight Ridge, T45N R8W, sec. 23 NW¼, 18 Jul 2002, *Knorr & Barnes 658* (KNFY); 0.25 mi W of Indian Creek Baldy summit, T45N R9W, sec. 24 NWNW¼, 23 Jul 2002, *Knorr 659* (KNFY); 0.1 mi W of Indian Creek Baldy summit, T45N R9W, sec. 24SENW¼, 23 Jul 2002, *Knorr 660* (DAV); 0.25 mi N of Indian Creek Baldy summit, T45N R9W, sec. 24 NWNE¼, 23 Jul 2002, *Knorr 663* (KNFY); top of Deadwood Baldy Peak at old lookout site, T45N R8W, sec. 7 NW¼, 27 Jul 2002, *Knorr & Fickert 664* (JEPS, SOC); 1 mi E of Montana Peak along Gunsight Ridge, T45N R8W, sec. 13 S½, 27 Jul 2002, *Knorr & Fickert 666* (UC). Trinity Co.: Trinity Mtn. [7.6 air mi ESE of Ridgeville, T34N, R7W, sec. 9], 4700 ft elev., 20 Jul 1913, *Dayton 402* (USFS); Trinity Mtn., N side of ridge, 4200 ft elev., 25 Jul 1913 (USFS); Trinity Mtn., 5000 [sic, ca. 4700] ft elev., 3 Jul 1937, *True 756* (UC).

RELATIONSHIPS

The blushing wild buckwheat, *Eriogonum ursinum* S. Watson var. *erubescens* (from the Latin for blushing) belongs to the subg. *Oligogonum* Nutt. (typified by *E. umbellatum* Torr.). The var. *ursinum* occurs well to the south and east of var. *erubescens* and has decidedly smaller involucre (3.5–4.5 mm), mature flowers (5–6 mm), and achenes (3–5 mm). The most significant difference is in the inflorescence. In var. *erubescens*, the umbellate inflorescence is composed of three to five (or

rarely seven) branchlets that surround a central peduncle. Two or three linear to narrowly lanceolate bracts terminates each branchlet. Atop each branchlet is an erect peduncle. Taken together, the combination of the branchlet and peduncle appears to be a branch with a whorl of bracts about midlength. The single, centrally positioned peduncle is bractless (the lack of bracts defines a peduncle). In var. *ursinum* its compound umbellate inflorescence is composed of seven to eleven branches each of which is terminated by three to five (or more) bracts. Atop each of these branches is a central peduncle and three to five additional branchlets. Each of these branchlets is terminated by a short peduncle. The peduncles atop the branchlets in var. *erubescens* can be up to 10 mm long in fruit whereas those of var. *ursinum* do not exceed 5 mm.

As a result the inflorescence in *Eriogonum ursinum* var. *erubescens* is a simple umbel whereas it is typically branched twice (or biumbellate) in var. *ursinum*. The combination of more numerous branches, branchlets and short peduncles means the inflorescence atop each flowering stem of var. *ursinum* is larger and more congested than that seen in var. *erubescens*. The overall height of the Bear Valley wild buckwheat is about twice that of the blushing wild buckwheat (0.4–4 vs. 0.4–2 dm), but given the complete overlap this can be considered only a population tendency. Both varieties occur on soils of a volcanic origin unlike the related *E. nervulosum* (S. Stokes) Reveal, a plant of serpentine soils of the northern Coast Ranges (Sonoma and Lake counties).

DISTRIBUTION, HABITAT, AND PHENOLOGY

The six populations of *Eriogonum ursinum* var. *erubescens* located from five to eight km west of Yreka, have been studied in detail. The populations are located along ridge tops near Gunsight Peak, and on the peaks of Indian Creek Baldy and Deadwood Baldy. These high-elevation peaks and ridge system form the eastern end of the Scott Bar Mountains, a small mountain range that runs from the Marble Mountains northeast to Yreka. Geographically these peaks and ridges are part of the Klamath

Ranges that border the Cascade Ranges in Shasta Valley, seven km east of Yreka (Hickman 1993). The plants are found at elevations of 1620 m to 1890 m where they occur on the north-facing slopes of open rocky ridge tops.

These populations of var. *erubescens* show no particular edaphic endemism. The plants are found in the Western Paleozoic and Triassic belt, a broad arc of rocks that are found extensively in the Klamath Mountains. The four populations found along the ridgeline near Gunsight Peak are on rocks of a Late Triassic age greenstone-chert assemblage composed of metavolcanic and metasedimentary rocks that meet with great complexity in this area (Elder, pers. comm.). The Indian Creek Baldy population occurs on metavolcanics whereas the Deadwood Baldy Peak population is found on chert (USDA Forest Service 2002). The soils derived from the open rock outcrops consist of shallow, well-drained soils formed in residuum from metamorphic rocks.

The local climate varies widely from summer to winter. In the winter the eastern Scott Bar Mountains receive an average 58 cm of precipitation that falls primarily as snow along the high-elevation ridgelines (Golden Gate Weather Service 2002). Although the summers are hot and dry, snow banks persist on the north slopes of the ridges well into May. The majority of the var. *erubescens* populations are found on the north slopes where melting snow provides additional water well into the summer.

The blushing wild buckwheat is found in rocky openings within a sparse *Holodiscus discolor*-*Prunus emarginata* shrub community that follows the open ridges above a mixed conifer forest dominated by *Pseudotsuga menziesii* (Mirb.) Franco, *Pinus ponderosa* C. Lawson, *Calocedrus decurrens* (Torr.) Florin, and *Pinus lambertiana* Douglas. The rock outcrops support a depauperate plant community that is dominated by herbaceous species in the pockets of slightly deeper soils. The most commonly associated species are *Eriogonum umbellatum* Torr. (an undescribed variant near var. *bahiiforme* (Torr. & A. Gray) Jeps.),

Penstemon parvulus (A. Gray) Krautter, *Monardella glauca* Greene, *Achnatherum lemmonii* (Vasey) Barkworth, and *Calochortus persistens*.

Although the majority of the species within the population sites are common within the Klamath Ranges, species such as *Phlox rigida* Benth. and *Juniperus occidentalis* Hook. var. *australis* (Vasek) N. H. Holmgren show affinities with Great Basin plant communities. This may be due to the presence of an isolated island of Great Basin flora in Shasta Valley less than ten km east of Gunsight Peak (Hickman 1993).

The initial population of *Eriogonum ursinum* var. *erubescens* was located in November of 2001 using herbarium label data and personal knowledge of the specimen collection location. Additional surveys were conducted in June and July of 2002 to locate potential new sites. A stratified search method using soil and parent material types, elevations, plant community types, and the presence of *Calochortus persistens* proved fruitful, and five additional populations were discovered during seven days of surveying. These surveys focused on potential locations that were closest to the first known site and radiated out to cover additional suitable habitat. Although the variety will remain a regional endemic, additional surveys in similar habitats on the Klamath National Forest may reveal new populations.

The six studied populations of *Eriogonum ursinum* var. *erubescens* range in size from 49 plants covering less than 0.1 hectares to approximately 4000 plants covering 2-3 hectares. Primarily mature flowering individuals have been observed, with mature, but non-flowering individuals forming the next largest age class. Only a few seedlings have been seen in small sites that received complete coverage while counting plant numbers. In larger sites, plant numbers were estimated and few seedlings were observed, although they can be easily overlooked.

The plants were first observed in full bloom during the last week of June 2002. The inflorescences were a pale cream color as the flowers opened. By mid-July they were in full bloom and some plants had started to develop the characteristic red blush. By the end of July 2002, nearly all

the flowers had begun to set fruit and were fading from cream to varying shades of pink and red. It is possible that the change in flower color may be a signal to pollinators that a specific flower has been successfully pollinated. At the type locality, three individuals among an estimated population of 1200 were seen to have yellow flowers.

Herbarium studies have shown the blushing wild buckwheat also occurs on Trinity Mountain on the Shasta-Trinity county line some 63 air miles to the south.

CONSERVATION CONSIDERATIONS

All of the *Eriogonum ursinum* var. *erubescens* populations currently known are located on lands managed by the Klamath National Forest. Four of the Scott Bar Mountains populations are located within a Special Habitat Management Area designated for Sensitive plant habitat protection. This management area, designed to protect *Calochortus persistens*, encompasses the open rocky ridgelines where var. *erubescens* is found. The primary management goal for the Area is to manage the habitat to provide for a viable population of *C. persistens* (USDA Forest Service 1994). The Standards and Guidelines for this area will also provide protections for the four *Eriogonum* sites located within the Special Habitat Management Area. The two other locations known from the Scott Bar Mountains are located on the open tops of two peaks (Deadwood Baldy and Indian Creek Baldy) where little disturbance is expected to occur. Designation as a Forest Service Region 5 listed Sensitive plant species will provide protection for these two sites should any management activities be proposed within the areas.

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